UNIVERSIDADE FEDERAL DE SERGIPE

CENTRO DE CIÊNCIAS BIOLÓGICAS E DA SAÚDE

DEPARTAMENTO DE FARMÁCIA

FERNANDA OLIVEIRA PRADO

AVALIAÇÃO DAS ATITUDES COLABORATIVAS ENTRE ESTUDANTES DE FARMÁCIA E MEDICINA NO BRASIL

São Cristóvão, SE

Março de 2017

UNIVERSIDADE FEDERAL DE SERGIPE

CENTRO DE CIÊNCIAS BIOLÓGICAS E DA SAÚDE

DEPARTAMENTO DE FARMÁCIA

FERNANDA OLIVEIRA PRADO

AVALIAÇÃO DAS ATITUDES COLABORATIVAS ENTRE ESTUDANTES DE FARMÁCIA E MEDICINA NO BRASIL

Trabalho de Conclusão de Curso apresentado como exigência para obtenção do título de Bacharel em Farmácia.

Orientador: Prof. Dr. Divaldo Pereira de Lyra Jr.

São Cristóvão, SE

Março de 2017

SUMÁRIO

ARTIGO

EVALUATION OF STUDENT'S ATTITUDES TOWARD PHARMACIST-PHYSICIAN COLLABORATION IN BRAZIL

FERNANDA OLIVEIRA PRADO

Pharmacy Student
Laboratory of Teaching and Research in Social Pharmacy (LEPFS), Address: CidadeUniversitária "Prof. José Aloísio Campos", Jardim Rosa Elze, São Cristóvão, CEP: 49100-000, Brazil
E-mail: fernandaprado94@yahoo.com.br
Phone: +55 79 9 9978 0766

KERILIN STANCINE SANTOS ROCHA

Master's Degree Student
Laboratory of Teaching and Research in Social Pharmacy (LEPFS), Address: CidadeUniversitária "Prof. José Aloísio Campos", Jardim Rosa Elze, São Cristóvão, CEP: 49100-000, Brazil
E-mail: kerilin.farm@gmail.com
Phone: +55 79 9 9978 5398

DYEGO CARLOS SOUZA ANACLETO DE ARAÚJO

Master's Degree Student
Laboratory of Teaching and Research in Social Pharmacy (LEPFS), Address: CidadeUniversitária "Prof. José Aloísio Campos", Jardim Rosa Elze, São Cristóvão, CEP: 49100-000, Brazil
E-mail: dyegodm_pb@hotmail.com
Phone: +55 79 9 9 9682 5327

LUIZA CORREIA CUNHA

PHD Student
Laboratory of Teaching and Research in Social Pharmacy (LEPFS), Address: CidadeUniversitária "Prof. José Aloísio Campos", Jardim Rosa Elze, São Cristóvão, CEP: 49100-000, Brazil
E-mail: luiza_farmacia@hotmail.com
Phone: +55 79 9 9960 2200

DIVALDO PEREIRA LYRA JUNIOR*

Adjunct Professor
Laboratory of Teaching and Research in Social Pharmacy (LEPFS), Address: CidadeUniversitária "Prof. José Aloísio Campos", Jardim Rosa Elze, São Cristóvão, CEP: 49100-000, Brazil
E-mail: lyra_jr@hotmail.com/lepfs.ufs@gmail.com
Phone: +55 79 9 9192 5577

***Corresponding author: DP Lyra Jr. Laboratory of Teaching and Research in Social Pharmacy (LEPFS), Address: Cidade Universitária "Prof. José Aloísio Campos", Jardim Rosa Elze, São Cristóvão, CEP: 49100-000, Brazil. Phone/Fax: +557921056319. E-mail:** lepfs.ufs@gmail.com.

ABSTRACT

Interprofessional collaboration is a developing worldwide trend that can improve health care delivery system and patient outcomes, including medication use, avoid failures and decrease health cost. Studies have demonstrated that collaboration between pharmacists and physicians should initiate since graduation. However, there is not any study that propose to measure interprofessional collaboration between Pharmacy and Medical students in Brazil. The aim of this study was to measure undergraduate Pharmacy and Medical students' collaborative attitudes. A cross-sectional descriptive study was carried out from September 2016 to February 2017 in northeast of Brazil. Students were invited to complete the Scale of Attitudes Toward Pharmacist-Physician Collaboration ($SATP^2C$). Survey data were coded and entered into IBM SPSS (22 version) software. Three hundred fifty-nine students completed the $SATP^2C$: 207 Pharmacy (57.7%) and 152 Medical students (42.3%); 202 students were female (56.3%), 96 were male (26.7%) and 61 did not provide gender information (17%); 216 students were at first year (60.2%) and 143 were at last year (39.8%) of graduation. Women showed more positive collaborative attitude than men did (53.47 ± 6.81 vs. 55.25 ± 6.26; $p = 0.037$). Pharmacy students had a higher score than Medical ones (57.54 ± 4.73, vs. 51.34 ± 6.45; $p = 0.001$). Among Medical students, first year students showed themselves more available to collaborative attitudes than last year (52.27 ± 6.01 vs. 49.84 ± 6.88; $p = 0.033$). Thereby, the present study gives a first landscape about Pharmacy and Medical student's collaborative attitudes in Sergipe, Brazil that could be a reflection of the kind of health education they receive.

Keywords: Interprofessional Collaboration, Interprofessional Education, Interprofessional Relations, Medical students, Pharmacy students

Introduction

Collaboration between the primary health care providers have been identified as a practice for the prevention of mortality related to drugs and also may result in an improvement of health outcomes for the patients (ARCHER et al., 2012; WHO, 2010; ZATZICK et al., 2014). Problems in collaborative practice as organizational culture and communication issues can affect work process and safety in surgery, and may lead to death (LINGARD, 2004; THE JOINT COMMISSION, 2004; WILLIAMS, 2007).

An interprofessional team-based service can improve blood pressure levels control with an 8.75 mmHg reduction in systolic blood pressure and a 3.6 mmHg in diastolic blood pressure. Besides, it can also reduce 0.33% of hemoglobin A1C and US$ 421.01/patient in health care cost (CARTER et al., 2009; CUNHA, 2016; FIKE et al., 2013; FRANKLIN et al., 2013; KOSHMAN et al., 2008; TRICCO et al., 2012). In this context, the exchange of experiences between health care professionals promotes an improvement in their skills for healthcare through collaborative practices (VAN et al., 2012).

Interprofessional collaboration can be described as working together cooperatively, sharing responsibilities to solve problems and making decisions for patients, respecting the different qualities and abilities of both professionals (BAGGS, SCHMITT, 1988; COLUCCIO, MAGUIRE, 1983). Several studies highlight the need for a collaborative practice between different health care professionals, including physicians and pharmacists (SOUSA, 2014; ZANOTTI et al., 2015, WINKLE et al., 2012, VAN et al., 2012, WHO, 2010).

The government and universities of some countries as Canada, Sweden, United Kingdom, and more recently, Italy, have been promoting the development of interprofessional care (ZANOTTI et al., 2015). Although all the incentives to work in collaboration, if professionals are not training already at graduation to work together they are going to have some difficulty to do it (BOLAND et al, 2016). Thereby, there are some groups of study developing competencies and strategies inside Interprofessional Education in order to develop and improve collaboration between different professionals (BOLAND et al, 2016; WANG et al., 2016).

In Brazil, interprofessional education has been introduced recently once the predominant higher health education model used to be uniprofessional in its orientation (PEDUZZI et al., 2013). Since 2002, National Curricular Guidelines for health courses require professionals capable of work in collaboration, interprofessionaly, reinforcing the necessity of interprofessional education.

A way of measuring attitudes towards collaborative relationships is through instruments, such as collaborative scales. The Scale of Attitudes Toward Pharmacist-Physician Collaboration can be used not only for physicians and pharmacists but also for graduating students (FIKE et al., 2013; HOJAT et al., 2011; WINKLE, 2012). Although studies have demonstrated that collaboration should initiate since graduation, there is not any study that propose to measure interprofessional collaboration between Pharmacy and Medical students in Brazil. Then, this research aimed to measure undergraduate Pharmacy and Medical students' collaborative attitudes.

Background

Improve the predisposition of Pharmacy and Medical students to work collaboratively can be a decisive strategy for, in the future, they could work together and optimize patient outcome, providing more effectiveness and safety treatment (BACCI et al., 2016; West et al, 2016). Therefore, it is important to measure the collaborative attitudes between Pharmacy and Medical students, once those attitudes can reflect in the conduction of patient care (FIKE et al., 2013; WINKLE, 2012).

In this context, it is possible to apply a questionnaire with an attitude scale to these students. There are plenty of scales that measure the collaborative work as the Collaborative working relationship model (McDONOUGH; DOUCETTE, 2001), the Physician/Pharmacist Collaboration Instrument (ZILLICH et al., 2005) and the Scale of Attitudes Toward Pharmacist-Physician Collaboration (HOJAT; GONNELLA, 2011; WINKLE; FJORTOFT; HOJAT, 2011). Although all the scales are good instruments to evaluate interprofessional collaboration, the two first scales were developed specifically for professionals (CUNHA, 2016).

In contrast, the SATP^{2}C can be used not only to evaluate practitioners' collaborative attitudes, but also Pharmacy and Medical students' collaborative attitudes

(HOJAT; GONNELLA, 2011; WINKLE; FJORTOFT; HOJAT, 2011). This scale has already been used over the world, like United States of America, China and Croatia (WINKLE et al., 2012; SESELJA-PERISIN et al., 2015; CUNHA, 2016; WANG et al., 2016). In China, this instrument was applied to students, in American and Chinese version of instrument, to evaluate local interprofessional education (WANG et al., 2016). In Croatia, both pharmacists and physicians as well as Pharmacy and Medical students were evaluated about interprofessional collaboration (SESELJA-PERISIN et al., 2015). In Brazil, this scale was translated and adapted by Cunha (2016). Therefore, this scale is actually the viable tool to measure collaborative attitude between Pharmacy and Medical students throughout graduation.

Methods

Study design

A cross-sectional descriptive study was carried out from September 2016 to February 2017 in Sergipe State, in Northeast of Brazil, to evaluate the collaborative attitudes between Pharmacy and Medical students.

Sample size

Pharmacy and Medical students from the first and the last year of courses composed the sample. These students were from the three largest Universities of Sergipe and were chosen by convenience. Population number was provided by the higher institutions' coordination.

The sample was calculated for a finite population of 763 students, adopting a confidence level of 95% ($p < 0.05$) and a margin of error of 5%, totalizing 256 students. It was included students: (1) of both genders; (2) enrolled in the first or last year of Pharmacy or Medical graduation in one of the three universities and (3) who accepted to participate in the project.

Data collection

Pharmacy and Medical students from the first and last year enrolled in Federal University of Sergipe (located in two cities, São Cristóvão and Lagarto) and Tiradentes

University (located in Aracaju) were invited to complete the SATP^{2}C. These Universities are the three largest higher education institutions in the state of Sergipe, located in Northeast of Brazil.

This scale is a 16 Likert-type items on a 4-point scale (1 = strongly disagree; 2 = disagree; 3 = agree; 4 = strongly agree). All the items are directly scored with the exception of the 9th, that is a reverse scored item (1 = strongly agree; 2 = agree; 3 = disagree; 4 = strongly disagree). The respondent can score between 16 and 64. A high score means a more positive attitude about the relationship between physicians and pharmacists (WINKLE et al., 2011). This instrument was applied in two forms: presently and on-line. In both cases, all the participants were instructed before the application and could give up at any time. In presently application, three researchers (FOP, KSSR, DCAA) were at the three universities and asked the students to answer the scale. In on-line application, the students were asked to answer the same scale in an on-line version. Besides instrument data, students also provided data about their gender, age, higher education institution, course and year of course.

Data analysis

Data from the survey instrument were coded and entered into IBM SPSS (22 version) software and digitation was made by one of the researchers (FOP). Kolmogorov-Smirnov test was used to check the normality assumption, Mann–Whitney Rank Sum test for comparison between groups and Spearman Rank Order for correlation of age and total score. Results were expressed as mean (MD) ± standard deviation (SD). Differences were considered significant when the p-value < 0.05 (HOJAT et al., 2012).

Ethics approval

This research was submitted and approved by Ethics Committee on Research Involving Human Beings from Federal University of Sergipe (62433616.8.0000.5546).

Results

Three hundred fifty-nine students composed the sample. Mean age was 22.54 ± 4.71. Sociodemographic aspects are shown in Table 1.

[INSERT TABLE 1]

The mean score of each item for each course is shown in Table 2 and ranged from a low of 2.76 (for the item '*Pharmacists are qualified to assess and respond to patients' drug treatment needs*') from Medical students to a high of 3.82 (for the item '*A physician should be viewed as a collaborator and colleague with a pharmacist rather than his/her superior*') from Pharmacy students.

[INSERT TABLE 2]

There was no significant correlation between age and score ($p = 0.64$). There was also no significant comparison as regards traditional methodology and active methodology ($p = 0.094$). In opposition, women reveled more positive collaborative attitude than men (55.25 ± 6.26 vs. 53.47 ± 6.81; $p = 0.037$) and Pharmacy students seemed more available to collaborative attitudes (57.54 ± 4.73, $p < 0.00$) than Medical students (51.3 ± 6.45, $p < 0.95$). Medical students from first year revealed more positive collaborative attitude than those at last year (Table 3). Detailed mean score from Pharmacy and Medical courses is shown in Table 4.

[INSERT TABLE 3]

[INSERT TABLE 4]

Discussion

Actually, interprofessional collaboration is a widely acknowledge subject. Government, healthcare decision-makers and health professionals have been discussing the need of interprofessional collaborative work in order to prevent drug-related problems, improve patient safety, optimize team member's skill and enhance quality of health care delivery system (REGAN et al., 2015; REEVES et al., 2014; WHO, 2010). In this sense, positive collaborative attitudes between pharmacists and physicians are fundamental (OBRELI NETO et al., 2011). Aiming that, this study evaluated Pharmacist and Medical students toward collaborative attitudes.

It was observed a difference between genders, women demonstrated more positive collaborative attitude. This find is consistent to previous studies and may be associated to women's social and communication skills and maternal attitudes (HOJAT et al., 2014; HANSSON et al., 2010; WARD et al., 2008). However, these was not observed in Wang

and colleagues (2016) study who found men more available to collaborative attitude. According to them, this found may be attached to local culture – in China, open-mind is a strong characteristic of masculinity. In opposite, Hojat and colleagues (2011) did not found gender difference in his study. Furthermore, the divergent founds could be attached to sample size.

Pharmacy students were more available to collaborative attitudes than Medical ones. These results corroborate with studies from Hojat and colleagues (2011) and Winkle and colleagues (2012) where pharmacists and Pharmacy students had a large score than physicians and Medical students. This could be due to changes in pharmaceutical conduct as it seeks for its space in health care and is asked to participate of it (WHO, 2010). This new endeavor also reflects in students' behavior. In fact, collaborative working relationship between pharmacists and physicians depends primary on physicians' willingness although pharmacists are the first ones to initiate the relationship (BACCI et al., 2016). Also, a study realized with nurse and physicians showed a less collaborative attitude from physicians, claiming that physicians have a common self-perception of being the dominant authority in patient care (VEGESNA et al., 2016). In this sense, some studies should be done in order to encourage Medical students to work collaboratively.

The fact of first-year Medical students had a higher score than last-year Medical ones may be associated with the emphasis on specialization and profession-specific education that did not stimulates the interprofessional networking (EBERT et al., 2014; KHALILI et al., 2014; KHALILI et al., 2013). In addition, Hojat and colleagues (2014) highlight that physicians see themselves in the top of hierarchical patient care, possessing a greater power position, so they are less likely to demonstrate collaborative attitudes (WINKLE et al., 2011). When Medical students get in touch with those physicians (in medical institutions and hospitals), they seems to be more influenced by its peers than by some interprofessional collaborative discipline (HANSSON et al., 2010).

The kind of learning processes should also influence students' behavior against collaborative attitudes. Historically, the teacher is the center of knowledge and the students learn from him (SIMON, et al., 2014). This traditional learning process is based on compartmentalization and specialization of knowledge (CAPRA, 2006) and according to some scholars, it brings difficulty integrating theory and practice (COTTA, et al., 2012). More recently, active learning has been discussed once it is a learning process that makes the student the main responsible for its own learning, becoming reflexive and

critical before situations (COTTA, et al., 2012). Thus, it is pointed that interprofessional work should be practiced using non-traditional learning tools (BREWER, et al., 2016; SIMON, et al., 2014; WANG, et al., 2016). In contrast, this study did not found difference between traditional and active learning. This can be due to sample size, requesting more studies in this area.

Brazil is a continental country with cultural and regional differences, so this study had some limitations about sample size that did not allow bigger generalization, once it involves respondents of one state of Brazil. Time of instrument application can also have influenced acquired data once due to the difference in higher education institutions calendar, some respondents participated of the research by the time of finishing the period while other respondents participated of the research by the time of starting the period. Another experience observed was the difficulty of Medicine students' participation on search through instrument online version.

Concluding comments

This study succeeded in measuring undergraduate Pharmacy and Medical students' collaborative attitudes, showing Pharmacy students more available to demonstrate collaborative attitudes. It was also verified that through Medical school, students tendency to lost those attitudes. Then, it is clear that more studies should be done in order to confirm the finds and bring more information, collaborating to improvement of Interprofessional education.

Acknowledgments

We would like to thank higher institutions' coordination for assistance and collaboration and Pharmacy and Medical students for participation in survey. We would also like to thank Lepfs group for being available to help along this survey.

Declaration of interest

The authors report no conflicts of interest. The authors alone are responsible for the content and writing of the article.

References

Archer, J., Bower, P., Gilbody, S., Lovell, K., Richards, D., Gask, L., Dickens, C. & Coventry, P. (2012). Collaborative care for depression and anxiety problems. *Wiley.*

Baggs, J. G. & Schmitt, M. H. (1988). Collaboration between nurses and physicians about care decisions. Image: *Journal of Nursing Scholarship*, 20, 145–149.

Boland, D. H., Scott, M. A., Kim, H., White, T. & Adams, E. Interprofessional immersion: Use of interprofessional education collaborative competencies in side-by-side training of family medicine, pharmacy, nursing, and counselling psychology trainees. (2016). *Journal of Interprofessional Care*, 30, 6, 739-746.

Brasil, Conselho Nacional de Educação Câmara de Educação Superior. (2002). *Resolução CNE/CES 2, de 19 de Fevereiro de 2002.*

Brasil, Ministério Da Saúde. (2011). *Portaria nº 2.488, de 21 de outubro de 2011*.

Brasil, Portal Da Saúde, Sus. (2016). Retrieved from http://dab.saude.gov.br/portaldab/nasf_perguntas_frequentes.php

Margo L. Brewer & Hugh Barr. (2016). Interprofessional Education and Practice Guide

No. 8: Team-based interprofessional practice placements. *Journal of Interprofessional Care*, 30, 6, 747–753. (doi:10.1080/13561820.2016.1220930)

Carter, B.L., Bergus, G.R., Dawson, J.D., Farris, K.B., Doucette, W.R., Chrischilles, E. A. & Hatrz, A.J. (2008). A cluster randomized trial to evaluate physician/pharmacist collaboration to improve blood pressure control. *Journal of Clinical Hypertension*, 10, 260–271.

Capra, F. (2006). *O ponto de mutação: a ciência, a sociedade e a cultura emergente.* São Paulo: Cultrix.

Coluccio, M. & Maguire, P. (1983). Collaborative practice: Becoming a reality through primary nursing. *Nursing Administration Quarterly*, 7, 59–63.

Cotta, R. M. M., Da Silva, L. S., Lopes, L. L., Gomes, K. O., Cotta, F. M., Lugarinho, R. & Mitre, S. M. (2012). Construção de portfólios coletivos em currículos tradicionais: uma proposta inovadora de ensino-aprendizagem. *Ciência e Saúde Coletiva*, 7, 3, 787-796.

Cunha, L.C. (2016). *Colaboração entre farmacêuticos e médicos: uma revisão sistemática e validação de um instrumento de avaliação.* São Cristóvão, 2016. Dissertação (Mestrado em Ciências Farmacêuticas) – Universidade Federal de Sergipe.

Ebert, L., Hoffman, K., Levett-Jones, T., & Gilligan, C. (2014). "They have no idea of what we do or what we know": Australian graduates' perceptions of working in a health care team. *Nurse Education in Practice,* 5, 14, 544–550.

Fike, D. S., Zorek, J. A., MacLaughlin, A. A., Samiuddin, M., Young, R. B. & MacLaughlin, E. J. (2013). Development and Validation of the Student Perceptions of Physician-Pharmacist Interprofessional Clinical Education (SPICE) Instrument. *American Journal of Pharmaceutical Education*, 77, 9, 1-8.

Franklin, B.E., Farland, M.Z., Thomas, J., Macfarland, M.S., Ray, S.M. & Byrd, D.C. (2013). Pharmacoeconomic analysis of the diabetes initiative program: a pharmacist-physician collaborative care model. *Annals of Pharmacotherapy*, 47, 1627-1634.

Frigo, L.F., Da Silva, R.M., Manfio, F. & Boeira, G.S. (2012). A interdisciplinaridade na atenção primária: Um relato de experiência. *Revista de Epidemiologia e Controle de Infecção*, 2, 4, 146-147.

Hansson, A., Foldevi, M. & Mattsson, B. (2010). Medical students' attitudes toward collaboration between doctors and nurses – a comparison between two Swedish universities. *Journal of Interprofessional Care*, 24, 3, 242–250.

Hojat, M. & Gonnella, J.S. (2011). An instrument for measuring pharmacist and physician attitudes towards collaboration: Preliminary psychometric data. *Journal of Interprofessional Care,* 25, 66–72.

Hojat, M., Ward, J., Spandorfer, J., Arenson, C., Van Winkle, L. J. & Williams, B. (2014). The Jefferson Scale of Attitudes Toward Interprofessional Collaboration (JeffSATIC): development and multi-institution psychometric data. *Journal of Interprofessional Care*, 29, 3, 238–244.

Isetts, B.J., Schommer, J.C., Westberg, S.M., Johnson, J.K., Froiland, N. & Hedlund, J.M. (2012). Evaluation of a Consumer-Generated Marketing Plan for Medication Therapy Management Services. *Pharmacy Practice,* 3, 1, 1-19.

Khalili, H., Hall, J., & Deluca, S. (2014). Historical analysis of professionalism in western societies: Implications for interprofessional education and collaborative practice. *Journal of Interprofessional Care,* 28, 92–97.

Khalili, H., Orchard, C., Laschinger, H. K. & Farah, R. (2013). An interprofessional socialization framework for developing an interprofessional identity among health professions students. *Journal of Interprofessional Care*, 27, 448–453.

Koshman, S.L., Charrois, T.L., Simpson, S.H., Mcalister, F.A. & Tsuyuki, R.T. (2008). Pharmacist care of patients with heart failure: a systematic review of randomized trials. *Archives of Internal Medicine,* 168, 687-94.

Lingard L, Espin S, Evans C, Hawryluck L. (2004). The rules of the game: interprofessional collaboration on the intensive care unit team. *Critical Care*, 8, 403–8.

Obreli Neto, P.R., Marusic, S., Lyra Júnior, D.P., Pilger, D., Cruciol-Souza, J.M., Gaeti, W.P. & Cuman, R.K.N. (2011). Effect of a 36-month pharmaceutical care program on coronary heart disease risk in elderly diabetic and hypertensive patients. *Journal of Pharmacy & Pharmaceutical Science,* 12, 2, 249-263.

Peduzzi, M., Norman, I. J., Germani, A. C. C. G., Silva, J. A. M. & Souza, G. C. (2013). Interprofessional Education: Training for Healthcare Professionals for Teamwork Focusing on Users. *Revista da Escola de Enfermagem da USP,* 47, 4, 977-83.

Simon, E., Jezine, E., Vasconcelos, E. M., Ribeiro, K. S. Q. S. (2014). Metodologias ativas de ensino-aprendizagem e educação popular: encontros e desencontros no contexto da formação dos profissionais de saúde. *Comunicação Saúde Educação*, 18 2, 1355-1364. (doi: 10.1590/1807-57622013.0477)

Reeves, S., Mcmillan, S. E., Kachan, N., Paradis, E., Leslie, M. & Kitto, S. (2014). Interprofessional collaboration and family member involvement in intensive care units: emerging themes from a multi-sited ethnography. *Journal of Interprofessional Care*, 1-8.

Regan, S., Laschinger, H. K. S. & Wong, C. A. (2015). The influence of empowerment, authentic leadership, and professional practice environments on nurses' perceived interprofessional collaboration. *Journal of Nursing Management.*

Seselja-Perisin, A., Mestrovic, A., Klinar, I. & Modun, D. (2015). Health care professionals' and students' attitude toward collaboration between pharmacists and physicians in Croatia. *International Journal of Clinical Pharmacy.*

Silva, C., Ramalho, C., Luz, I., Monteiro, J. & Fresco, P. (2014). Drug-related problems in institutionalized, polymedicated elderly patients: opportunities for pharmacist intervention. *International Journal of Clinical Pharmacy.*

Simon, E., Jezine, E., Vasconcelos, E. M. & Ribeiro, K. S. Q. S. (2014). Metodologias ativas de ensino-aprendizagem e educação popular: encontros e desencontros no contexto da formação dos profissionais de saúde. *Comunicação Saúde Educação,* 18, 2, 1355-1364.

Sousa, I.F. (2014). *A interdisciplinaridade na formação farmacêutica: uma abordagem à luz da fenomenologia.* Campo Grande, 2014. Dissertação (Doutorado em Saúde e Desenvolvimento na Região Centro-Oeste) – Universidade Federal de Mato Grosso do Sul.

The Joint Commission. (2008). Sentinel Event Alert: Preventing infant death and injury during delivery. *The Joint Comission*, 39.

Tricco, A. C., Ivers, N. M., Grimshaw, J. M., Moher, D., Turner, L., Galipeau, J., … Shojania, K. (2012). Effectiveness of quality improvement strategies on the management of diabetes: a systematic review and meta-analysis. *The Lancet*, 379, 9833, 2252-2261.

VAN, C., Costa, D., Abbott, P., Mitchel, B., & Krass, I. (2012). Community pharmacist attitudes towards collaboration with general practitioners: development and validation of measure and a model. *BMC Health Services Research*, 12, 12, 220.

Van Winkle, L.J., Fjortoft, N., & Hojat, M. (2011). Validation of an instrument to measure pharmacy and medical students' attitudes toward physician-pharmacist collaboration. *American Journal of Pharmaceutical Education*, 75, 178. (doi: https://dx.doi.org/10.5688%2Fajpe759178)

Vegesna, A., Coschignano, C., Hegarty, S. E., Karagiannis, T., Polenzani, L., Messina E., … Maio, V. (2016). Attitudes towards physician–nurse collaboration in a primary care team-based setting: Survey-based research conducted in the chronic care units of the Tuscany region of Italy. *Journal of Interprofessional Care*, 30, 1, 65–70. (doi:dx.doi.org/10.3109/13561820.2015.1081878)

Wang, J., Hu, X., Liu, J. & Li, L. (2016). Pharmacy students' attitudes towards physician–pharmacist collaboration: Intervention effect of integrating cooperative learning into an interprofessional team-based community service. *Journal of Interprofessional Care.*

Ward, J., Schaal, M., Sullivan, J., Bowen, M.E., Erdmann, J.B., & Hojat, M. (2008). The Jefferson Scale of Attitudes toward Physician-Nurse Collaboration: A study with undergraduate nursing students. *Journal of Interprofessional Care*, 22, 375–386.

WHO. (2010). *Framework for Action on Interprofessional Education & Collaborative Practice. Departament oh Human Resources for Health resoucescentre*. Geneva, p. 64.

West, C., Graham, L., Palmer, R. T., Miller, M. F., Thayer, E. K., Stuber, M. L., … Patricia A. Carney. (2016). Implementation of interprofessional education (IPE) in 16 U.S. medical schools: Common practices, barriers and facilitators. *Journal of Interprofessional education & practice*, 4, 41-49.

Williams RG, Silverman R, Schwind C, Fortune JB, Sutyak J, Horvath KD, et al. (2007). Surgeon information transfer and communication: factors affecting quality and efficiency of inpatient care. *Annals of Surgery*, 245, 2, 159–69.

Winkle, L. J. V., Bjork, B. C., Chandar, N., Cornell, S., Fjortoft, N., Green, J. M., … Burdicka, P. (2012). Interprofessional Workshop to Improve Mutual UnderstandigBetween Pharmacy and Medical Students. *The American Journal of Pharmaceutical Education*, 76, 8, 150.

Zanotti, R., Sartor, G. & Canova, C. (2015). Effectiveness of interprofessional education by on-field training for medical students, with a pre-post design. *BMC Medical Education*, 15, 121.

Zatzick, D., Russo, J., Lord, S. P., Varley, C., Wang, J., Berliner, L., … Rivara, F. P. (2014). Collaborative Care Intervention Targeting Violence Risk Behaviors, Substance Use, and Posttraumatic Stress and Depressive Symptoms in Injured Adolescents – A Randomized Clinical Trial. *JAMA Pediatrics,* 168, 6, 532-539.

TABLES

Table 1: Sample's sociodemographic aspects.

	N	%
Gender		
Male	96	26.7
Female	202	56.3
Non informed	61	17
Total	359	100
Course		
Pharmacy	207	57.7
Medicine	152	42.3
Total	359	100
Year of course		
First	216	60.2
Last	143	39.8
Total	359	100

Table 2: Pharmacy and Medical students' mean score of each item from Scale of Attitudes Toward Pharmacist-Physician Collaboration.

Sentence	MD ± SD		
	Pharmacy Student	Medical Student	Total Score
A physician should be viewed as a collaborator and colleague with a pharmacist rather than his/her superior	3.82 ± 0.40	3.61 ± 0.64	3.73 ± 0.52
Pharmacists are qualified to assess and respond to patients' drug treatment needs	3.54 ± 0.56	2.76 ± 0.80	3.21 ± 0.77
During their education, pharmacy and medical students should be involved in teamwork in order to understand their respective roles	3.61 ± 0.52	3.64 ± 0.49	3.62 ± 0.50
Pharmacists can contribute to decisions regarding drug interactions that can affect the patients	3.77 ± 0.44	3.22 ± 0.69	3.54 ± 0.62
Pharmacists should be accountable to patients for the drug they provide	3.35 ± 0.64	2.84 ± 0.86	3.13 ± 0.78

There are many overlapping areas of responsibility between pharmacists and physicians in drug treatment of the patients	3.33 ± 0.57	3.30 ± 0.61	3.31 ± 0.59
Pharmacist have special expertise in counseling patients on drug treatment	3.53 ± 0.62	2.81 ± 0.77	3.23 ± 0.77
Both pharmacists and physicians should contribute to decisions regarding the type and dosage of medicine given to the patients	3.46 ± 0.69	2.86 ± 0.88	3.21 ± 0.83
The primary function of the pharmacist is to fill the physician's prescription without question.	3.66 ± 0.54	3.08 ± 0.65	3.41 ± 0.65
Pharmacists should be involved in making drug policy decisions concerning the hospital/pharmacy services upon which their work depends	3.60 ± 0.50	3.34 ± 0.56	3.49 ± 0.54
Pharmacists as well as physicians should have responsibility for monitoring the effects of drugs on the patients	3.48 ± 0.55	3.03 ± 0.84	3.29 ± 0.72
Pharmacists should clarify a physician's order when they feel that it might have the potential for detrimental effects on the patient	3.67 ± 0.61	3.13 ± 0.83	3.44 ± 0.76
Physicians and pharmacists should be educated to establish collaborative relationships	3.76 ± 0.42	3.71 ± 0.46	3.74 ± 0.44
Physicians should consult pharmacists for helping patients with adverse reaction or refractory to drug treatment	3.60 ± 0.54	3.18 ± 0.68	3.42 ±0.64
Physicians should be made aware that pharmacists can help in providing the right drug treatment	3.75 ± 0.49	3.37 ± 0.58	3.59 ± 0.56
Interprofessional relationships between physicians and pharmacists should be included in their professional education programs	3.61 ± 0.58	3.47 ± 0.57	3.55 ± 0.58

Table 3: Group differences on the Scale of Attitudes Toward Pharmacist–Physician Collaboration.

	n	MD ± SD	*p*
Gender			
Male	96	53.47 ± 6.81	0.037*
Female	202	55.25 ± 6.26	
Course			
Pharmacy	207	57.54 ± 4.73	0.001*
Medicine	152	51.34 ± 6.45	
Year of course			
First	216	55.03 ± 5.87	0.962
Last	143	54.73 ± 6.93	
Teaching method			
Traditional methodology	256	55.30 ± 6,16	0.094
Active methodology	103	53.95 ± 6,60	

Table 4: Mean score for each course in first and last year.

	MD ± SD		
	First Year	Last Year	*p*
Course			
Pharmacy	57.11 ± 4.84	58.16 ± 4.84	0.129
Medicine	52,27 ± 6.01	49,84 ± 6.88	0.033